

Daniel Municio

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University of California Berkeley | B.A Data Science | E.G : 2027 | GPA: 3.7

SKILLS

Data Analysis: Python, C++, Java, JavaScript, SQL, Pandas, Matplotlib, REGEX, Data Scraping

Robotics: ROS2, SLAM, Model Predictive Control, LQR, Optimization, KF/EKF

Machine Learning: CNN's, Modeling, Computer Vision, Pytorch, OpenCV, YOLO

EXPERIENCE

Sensors Engineering Intern - Rivian Automotive

May 2025 - Aug 2025

- Developed software for in-cabin child detection with UWB radar.
- Preprocessing algorithms utilize RPCA and FFT which feeds a range-doppler plot into CNN to detect human presence and distinguish between child vs adult
- 100% accuracy on 15 second radar scan, passing Euro NCAP safety regulations
- Saved \$35 per vehicle by avoiding traditional mmWave radar sensor for detection

Student Researcher - Agile Robotics & Perception Lab

Aug 2025 - Present

- Developing VLA with drone platform to pick up different objects using user prompts / descriptions and camera feed.
- Designed and Manufactured custom drone design with unique camera mounts and gripper end effector for hardware testing.

Autonomous Software Lead - Formula Electric Berkeley

Jan 2024 – Present

- Rewrote Model Predictive Control software to incorporate tire slip with Pacejka
- Wrote GraphSLAM algorithm which improved position accuracy 40% in one lap
- Moved perception from Early Stage Sensor Fusion to Lidar/Camera Late Stage Fusion
- Combined LiDAR and Camera measurements into an EKF with IMU + GPS + WSS measurements to improve GraphSLAM initial pose and landmark estimates.
- Integrated Software onto Nvidia Jetson and fully integrated with competition car
- **Dec 2024** Car drove autonomously, through in real world conditions in testing.

Lab Teaching Assistant - Introduction to Robotics

Aug 2025 - Present

- Developed labs that teach Forward and Inverse Kinematics using UR7e Robots
- Developed safety features for UR7e Robots that define safe zones with Control Barrier Function, which eliminated student accidents in the lab

Projects

Drone Kahlo

December 2024

- Created Autonomous Drone, with future goals of painting autonomously.
- Used Model Predictive Control to achieve stable hover and path following.
- Created a testing jig, to tune the controller while constraining the drone safely.

RC Track Pace Car

June 2024

- Automated an RC Car to do laps around a track at a given speed to assist runners.
- Used a playstation camera to detect lines around the track with OpenCV.
- Used PID control to have the car maintain constant velocity with feedback from an IMU and playstation camera data to stay inside the track lane.

Brushless Motor Driver

November 2024

- Designed and brought up a 3 phase motor driver for a standard brushless motor with an AS5600 encoder.
- Utilized 3 dual MOSFET's, going into a TMC6200 Gate Driver with an ESP32 to handle current-limiting, velocity control, and voltage sensing.
- Includes decoupling capacitors for noise reduction, and current sensing resistors.